IN THE CLAIMS

1. (Original) A device for performing statistical re-multiplexing of digital video signals, the device comprising:

a scheduler having first and second date inputs, a data output, and first and second control ports, the scheduler for combining signals at the plurality of data inputs into a signal at the data output that matches channel bandwidth of a transport medium coupled to the output of the scheduler;

a first de-multiplexer having a data output, a control port and date output, the first de-multiplexer re-coding an input signal in response to a first control signal received at the control port, the data input of the first de-multiplexer coupled to receive a first channel of data, the control port of the first de-multiplexer coupled to the first control port of the scheduler, the data output of the first de-multiplexer coupled to the first data input of the scheduler; and

a second de-multiplexer having a data input, a control port and a data output, the second de-multiplexer re-coding an input signal in response to a second control signal received at the control port, the data input of the second de-multiplexer coupled to receive a second channel of data, the control port of the second de-multiplexer coupled to the second control port of the scheduler, the data output of the second de-multiplexer coupled to the second data input of the scheduler.

2. (Original) The device of claim 1 further comprising an encoder having a data input, a data output, and a control port, the encoder for performing compression and rate adjustment on a data stream, the data input of the encoder coupled to receive a non-compressed stream of video sequences, the output of the encoder coupled to the input of the first de-multiplexer.

3. (Original) The device of claim 1 further comprising a splitter having a data input, first and second data output, the splitter converting a single stream into a plurality of streams of data, the input of the splitter coupled to receive a stream of compressed data having a plurality of channels, the first output of the splitter coupled to the data input of the first de-multiplexer, and the second output of the splitter coupled to the data input of the second de-multiplexer.

4. (Original) The device of claim 1 further comprising n additional de-multiplexers, each of the n additional de-multiplexers having a data input, a control port and a data output, each of the n additional de-multiplexers re-coding an input signal in response to a signal received at the

respective control port, and wherein the scheduler has a corresponding data input and control port for each of the n additional de-multiplexers, the data input of the scheduler, the control port of each of the n additional de-multiplexers coupled to a respective corresponding control port of the scheduler.

5. (Original) The device of claim 1, wherein the scheduler further comprises:

A scheduling table having an first input and a first output for generating control signals to select a particular channel for output based on an input control signal, the first input coupled to the first and second de-multiplexer; and a multiplexer having a plurality of data inputs, a data output, and a control port for providing at the data output of the multiplexer one of the signals received at the plurality of data inputs, the control input of the multiplexer coupled to the output of the scheduling table, each of the plurality of data inputs coupled to the respective data outputs of the first and second de-multiplexer.

6. (Original) The device of claim 5, wherein the scheduling table is a plurality of fixed sized tables that can be alternatively accessed.

7. (Original) The device of claim 5, wherein the scheduler further comprises:

a controller for controlling a rate at which the scheduler outputs data and which channels are output, the controller having a first set of control ports, a first control port and a second control output, at least one port in the first set of control ports coupled to the control input of the first de-multiplexer, and the first control output coupled to the first input of the scheduling table;

a first buffer having a data input, a data output, and a control input, for storing data on a first in, first out basis, the data input of the first buffer coupled to the data output of the first de-mulitplexer, the data output of the first buffer coupled to a first of the plurality of data inputs of the multiplexer, and the control input coupled to the second control output of the controller; and

a second buffer having a data input, a data output, and a control input, for storing data on a first in, first out basis, the data input of the second bugger coupled to the data output of the second de-multiplexer, the data output of the second buffer coupled to a second of the plurality of data inputs of the multiplexer, and the control input coupled to the second control output of controller.

8. (Original) The device of claim 5, wherein the scheduler further comprises:

a filler packet inserter having an input and an output for providing filler packet data in response to a control signal on the input, the input of the filler packet inserter coupled to a second control output of the scheduling table; and an output buffer having a first input, a second input and an output of the multiplexer and the second input of the output buffer coupled to the output of the filler packet inserter.

9. (Original) The device of claim 8, wherein the filler packet inserts a packet that contains a user-defined program identification number (PID) as the filler packet.

10. (Original) The device of clamim 5, wherein the controller receives receives and analyzes data from the first and second de-multiplexers for a sliding window of time T, and then sends out number of bits corresponding to a time T, for each of the channels, where T, is less than or equal to T.

11. (Original) A method for processing video data, the method including the steps of: performing but stream analysis; determining an incoming bit rate for each channel; determining whether the combined bandwidth requirement of all the channels exceeds the channel capacity; performing rate adjustment by re-multiplexing the channels if the combined bandwidth requirement of all the channels does not equal the channel capacity; scheduling the channels for transmission; and combining the channels and transmitting the combined channels over the transport medium.

12. (Original) The device of claim 11, wherein the step of performing bit stream analysis is performed for a sliding window of time having duration time T, and wherein the step of combining the channels and transmitting the combined channels is for a time T, for each of the channels, where time T, is less than or equal to T.

13. (Original) The device of claim 11, wherein the step of performing rate adjustment includes inserting extra packets, and the step of combining and transmitting includes adding and transmitting the inserted extra packets.

14. (Original) The device of claim 13, wherein the extra packets include user specified useful packets that contain user defined program identification (PID) information.

15. (Original) The device of claim 11, wherein the step of performing rate adjustment includes a) re-coding a selected channel, b) removing stuffing bytes, and c) removing user-defined un-useful packets, and the step of combining and transmitting includes combining and transmitting the re-coded channel.

16. (Currently amended) A method for processing video data, the method comprising:

~~includes the steps of:~~

examining a plurality of channels of bit streams each having a bit rate;

determining whether the sum of the bits rates for the plurality of channels is greater than a channel capacity; and

if the sum of the bits rates for the plurality of channels is greater than the channel capacity then determining whether a selected channel has a bit rate greater than the minimum bit rate for the selected channel and reducing the bit rate for the selected channel if it is determined that the selected channel has a bit rate greater than the minimum bit rate for the channel.

~~determining whether a sum of the bits rates for the plurality of channels is equal to a channel capacity;~~

~~if the sum of the bits rates for the plurality of channels is equal to a channel capacity, scheduling data for the plurality of channels for transmission; and transmitting data for the plurality of channels.~~

17. (Currently amended) The method for processing video data of claim 16, further comprising determining whether a sum of the bits rates for the plurality of channels is equal to the channel capacity; and

if the sum of the bits rates for the plurality of channels is equal to the channel capacity, scheduling data for the plurality of channels for transmission and transmitting data for the plurality of channels.

~~the steps of determining whether the sum of the bits rates for the plurality of channels is greater than the channel capacity; if the sum of the bits rates for the plurality of channels is greater than the channel capacity then performing the steps of:~~

~~selecting a channel;~~

~~determining whether the selected channel has a bit rate greater than the minimum bit rate for the channel; and~~

~~reducing the bit rate for the channel if it is determined that the selected channel has a bit rate greater than the minimum bit rate for the channel.~~

18. (Original) The method for processing video data of claim 17, further comprising the steps of:

determining whether there is a another channels having a bit rate greater than its minimum; and

performing rate conversion if there are no channels having a bit rate greater than its minimum.

19. (Original) The method for processing video date of claim 16, further comprising of determining whether the sum of the bits rates for the plurality of channels is less than the channel capacity;

if the sum of the bits rates for the plurality of channels is less than the channel capacity then performing the steps of: selecting a channel;

determining whether the selected channel has a bit rate is close to the minimum bit rate for the channel; and

increasing the bit rate for the channel if it is determined that the selected channel has a bit rate close to the minimum bit rate for the channel.

20. (Original) The method for processing video data of claim 19, further comprising the steps of:

determining whether there is another channels having a bit rate less then its maximum; and

adding null packets to the transmission if there are no channels having a bit rate less than its maximum.

21. (Original) The method for processing video data of claim 20, wherein the step of adding extra packets, instead of adding the null packet, adds packets having useful data that the include of use defined program identification information (PID) for the purpose of sending opportunistic data.

22. (Original) The method for processing video data of claim 16, wherein at least one of the plurality of channels of bit streams is a data stream that is buffered and not recoded.

23. (Original) The method for processing video data of claim 18, wherein the step of reducing the bit rate for the channels includes the steps of dropping a B-frame and replacing it with a new B-frame which only repeats the previous frame.

24. (Original) The method for processing video data of claim 16, wherein the step of scheduling data the plurality of channels for transmission includes the step of selecting packets for transmission from the plurality of channels based on the channel bandwidth, and the respective rates of the plurality of channels.

25. (Original) The method for processing video data of claim 24, wherein the step of selecting packets for transmission is performed by selecting a number of packets from each channel according to the following equation:

PacketPerTable (I)=(ScheduleTableSize*Rate(i)(TotalBandwidth).